- AUSTRALIAN PLANT DISEASE RECORDER -

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For confidential circulation to plant pathologists in Australia

PLEASE DO NOT ABSTRACT

COMMONWEALTH MYCOLOGICAL INSTITUTE
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CEREALS

BARLEY STRIPE MOSAIC VIRUS:

In the course of a survey of virus diseases of cereals and pasture grasses, carried out in Eastern Australia during the spring of 1960, a plant of the Masterhazi 193 variety of barley was collected from the Department of Agriculture State Research Farm, Werribee, Victoria. Seed of the variety had been obtained as an introduction from Hungary and plants grown from it exhibited symptoms similar to those described by McKinney for barley stripe mosaic virus (Plant Dis. Reptr. 37, 292-295, 1953).

Sap transmissions were made to Gabo wheat and Vantage barley. After 6 days the youngest leaves of both varieties developed a chlorotic mottle. This was followed by the development of necrotic brown streaks and almost white chlorotic patches, typical of the description given by McKinney for barley stripe mosaic virus.

In addition to being mechanically transmitted the virus is both seed and pollen transmitted (Gold et al, Phytopathology 44, 115-117, 1954) and may be readily controlled by roguing of infected plants.

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and

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FIELD CROPS

LUCERNE MOSAIC VIRUS:

A virus was isolated from a lucerne plant showing a mild mottle in a planting at Dickson, Canberra. The virus produced symptoms characteristic of lucerne mosaic virus in certain host plants. These included a green vein-banding type of mottle in Datura stramonium, a severe systemic disease in Nicotiana glutinosa from which the plants almost completely recovered insofar as symptom expression was concerned, brown necrotic lesions on Phaseolus vulgaris and Vigna sinensis, and systemic necrosis in Vicia faba. The virus was also readily transmitted by the aphid Myzus persicae.

Lucerne (alfalfa) mosaic virus antiserum was obtained from Dr. Ellen Moorhead Ball in the U.S.A. Antigen prepared from infected Datura stramonium gave a strong positive reaction with this antiserum in a gel double-diffusion test, confirming the diagnosis as lucerne mosaic virus.

Potato calico disease is caused by strains of lucerne mosaic virus. Potato calico has been reported from Queensland, apparently from field symptoms which could resemble those of the potato aucuba mosaic virus. This report is, to the writer's knowledge, the first adequate diagnosis establishing the presence of lucerne mosaic virus in Australia.

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VEGETABLES

POWDERY MILDEW OF FRENCH BEANS AND CUCUMBERS:

Bean mildew was observed for the first time in Queensland at Kin Kin near Gympie during the winter of 1960. Later in the year it appeared at Nambour and Lamb Island in Moreton Bay.

In two instances there was good evidence that the disease passed from cucumbers to the beans. In the first, a marked infection gradient was apparent across a planting situated adjacent to a badly mildewed cucumber plot. (The same type of infection gradient is of common occurrence where rust is the disease concerned.) In a second instance it was noticed that where a grower made successful winter plantings of beans across a field, powdery mildew attacked only those growing on two areas occupied by mildewed cucumbers in the previous winter.

Apple cucumbers and beans were inoculated simultaneously in an infection chamber with mildew from beans and both subsequently developed the disease. These specimens were forwarded to Mr. B.G. Clare, Lecturer in Plant Pathology, Waite Agricultural Research Institute for examination.

As previously noted by Clare (A.P.D.R., 11, 26) this mildew appeared to be the imperfect form of Sphaerotheca fuliginea.

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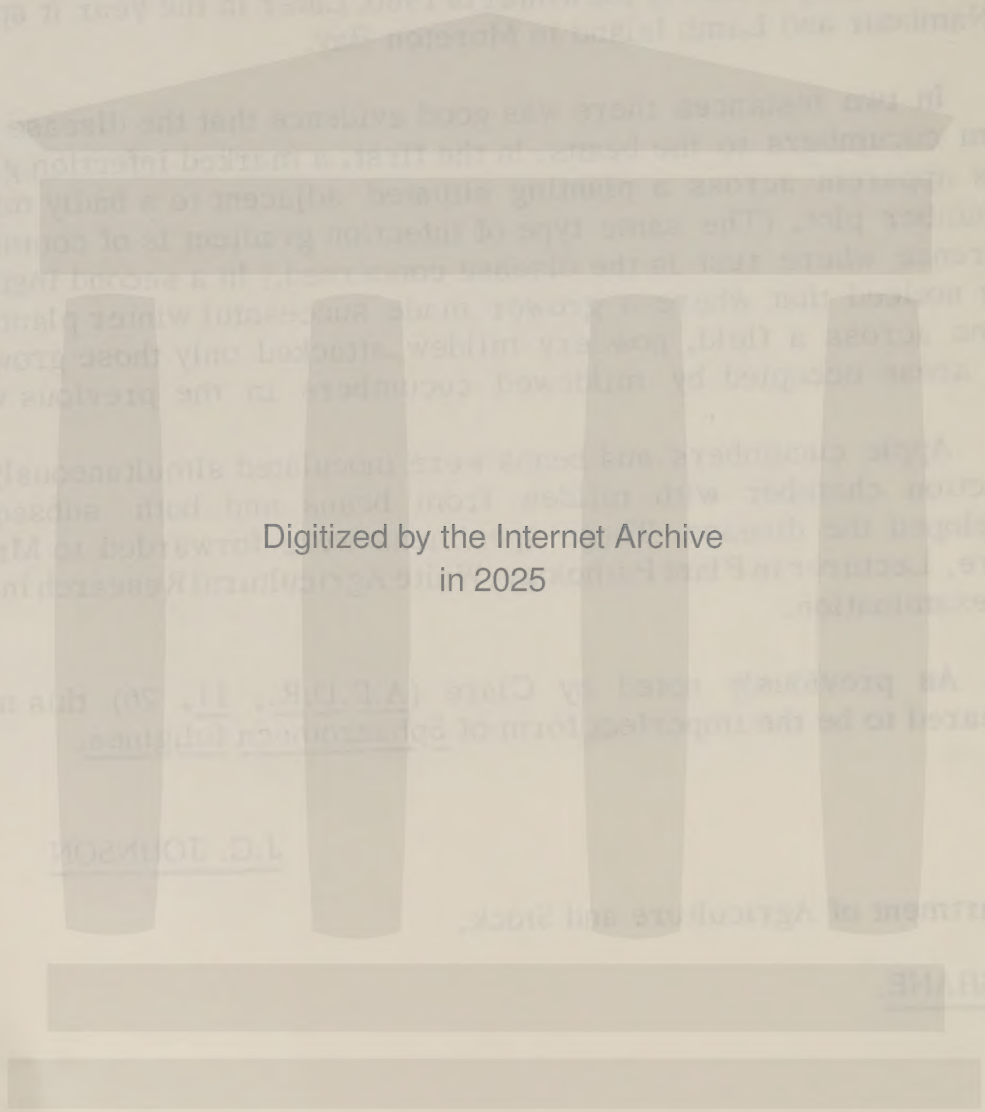

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BACTERIAL BLIGHT OF PEAS:

In testing some seed treatments on pea seed, highly charged with Pseudomanas pisi, some interesting observations wrre made when it was attempted to ensure that the symptoms of P. pisi were expressed to the maximum.

Seed, treated and untreated, was sown in a heated blasshouse on 15th July, 1960. At weekly intervals from two weeks after sowing one replicate of each treatment was moved outside and exposed to Canberra August-September conditions. When the seedlings were 9 weeks from sowing they were returned to the glasshouse and assessed two weeks later.

Whilst the various treatments showed virtually no control of the disease there was an interesting pattern relative to environmental conditions.

	Period Glasshouse (Weeks)	Period Outside (Weeks)	Period Returned to (Weeks)	% Plants Showing
A	11			5.5
B	2	7	2	10.25
C	3	6	2	39.5
D	4	5	2	71.8

It would appear that the severe winter environment is not the only contributing factor to symptom expression of P. pisi, since the highest incidence occurred on plants exposed when winter conditions were moderating slightly. These results suggest that the stage of growth, coupled with appropriate conditions to check the plant's growth, operate to produce the maximum expression of bacterial blight symptoms.

This is submitted to ascertain if any pathologist has had any experience along the lines outlined.

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GUMMY STEM BLIGHT AND ANTHRACNOSE OF WATERMELON:

Teakle (A.P.D.R. 11 (4) , 33, 1959), has referred to the importance of the gummy stem blight or black rot fungus (Myosphaerella melonis (Pass.) (Chiu & J.C. Walker) on watermelon and rockmelon in Queensland.

This disease was recorded for the first time in New South Wales in the late summer of 1960 in two crops of the watermelon variety Candy Red, one at Lower Portland and the other at Castlereagh. Infection in the former crop was light and had caused little yield reduction but in the latter crop a 50% yield reduction resulted from the disease.

During the current season, the disease is widespread in watermelon crops in the Hawkesbury district of this state. Infections of up to 100% have occurred with yield losses of up to 80% and averaging 30-40%. The disease has been particularly severe in plantings of Candy Red but was also present in the varieties Redheart and Florida Favourite. Growers of more than one variety stated that the disease appeared first in Candy Red.

Candy Red has become very popular with local growers over the last three to four years on account of its high yielding capacity, high quality, and reputed resistance to the local strain or strains of anthracnose (Colletotrichum orbiculare (Berk. et Mont.) v. Arx). The variety is a selection from the Fusarium wilt resistant Charleston Grey, which is also claimed to be resistant to some strains of anthracnose in U.S.A. (Simpson, American Veg. Grower 8 (6) , 28-29, 1960).

While the length of time that gummy stem blight has been present in New South Wales is not definitely known, it would appear possible that the original outbreak could have followed the introduction of infected seed of Candy Red. Seed invasion by the fungus has been demonstrated by Rankin (Phytopathology 44, 675-680, 1954). No fully effective seed treatment is at present available but possibley the value of a hot water treatment, which appears effective against anthracnose (Horn et al, Phytopathology 48 (8), 394, 1958), may be worthy of investigation.

In reference to the current outbreak of gummy stem blight, growers stated that there was a marked increase in infection during wet periods in December and greatest losses were sustained in those crops which were developing a heavy fruit load about that time. Later planted crops were not so severely affected and one crop which had received an application of copper oxychloride (4 lb/100 gal.) showed only a trace of the disease.

Anthracnose was present to some extent in all crops of Candy Red and it may be that a study of local strains of C. orbiculare would prove fruitful.

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FRUIT

SHOOT RESTRICTION DISEASE OF SULTANAS:

In sultanas throughout the dried fruits areas a condition named "shoot restriction disease" has been observed for a number of years which appears to be increasing in importance. The symptoms are stunting of shoot growth shortly after bud burst, cupping and mottling of leaves, and in severe cases necrosis of bunches or bunch portions. Affected vines sem to overcome the condition and in all but the most severe cases appear normal by the beginning of November.

Following a chance discovery around 1949 that lime sulphur applied shortly before bud burst will prevent the disease it was attempted unsuccessfully to isolate mites from dormant buds in numbers large enough to attribute the damage to them. Late in October 1960 a sample of very severely affected sultana shoots was examined and large numbers of mites resembling Eriophyes vitis were found on leaves, bunches, and under the scales at the base of the shoots. Similar mites were found on affected shoots from four other vineyards.

It would appear that "shoot restriction" may be a form of Erinose attacking sultanas very early in the season, but this theory cannot be tested until next spring.

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